Microsemi LAWRENCE

TECHNICAL DATA

NPN POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/528

Devices		*Qualified Level*
2N6032	**2N6033**	**JANTX JANTXV**

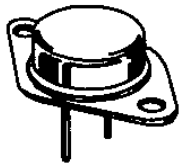
MAXIMUM RATINGS

Ratings	Symbol	2N6032	2N6033	Units
Collector-Emitter Voltage	V_{CEO}	90	120	Vdc
Collector-Base Voltage	V_{CBO}	120	150	Vdc
Collector Current	I_C	50	40	Adc
Emitter-Base Voltage	V_{EBO}	7.0		Vdc
Base Current	I_B	10		Adc
Total Power Dissipation @ $T_C = +25^0C$ (1)	P_T	140		W
Operating & Storage Temperature Range	T_{op}, T_{stg}	-65 to +200		^0C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.25	$^0C/W$

1) Derate linearly 800 mW/^{0}C between $T_C = 25^0C$ and $T_C = 200^0C$



TO-3*
(TO-204AA)

*See appendix A for package outline

ELECTRICAL CHARACTERISTICS ($T_C = 25^0C$ unless otherwise noted)

Characteristics		Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage					
I_C = 200 mAdc	2N6032	$V_{(BR)CEO}$	90		Vdc
	2N6033		120		
Collector-Emitter Breakdown Voltage					
I_C = 200 mAdc	2N6032	$V_{(BR)CER}$	110		Vdc
	2N6033		140		
Collector-Emitter Breakdown Voltage					
I_C = 200 mAdc, V_{EB} = 1.5 Vdc	2N6032	$V_{(BR)CEX}$	120		Vdc
	2N6033		150		
Collector-Base Cutoff Current					
V_{CB} = 120 Vdc	2N6032	I_{CBO}		25	mAdc
V_{CB} = 150 Vdc	2N6033			25	
Collector-Emitter Cutoff Current					
V_{CE} = 110 Vdc, V_{BE} =-1.5 Vdc	2N6032	I_{CEX}		12	mAdc
V_{CE} = 135 Vdc, V_{BE} =-1.5 Vdc	2N6033			10	

ELECTRICAL CHARACTERISTICS (con't)

Characteristics		Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS (con't)					
Emitter-Base Cutoff Current V_{EB} = 7.0 Vdc		I_{EBO}		10	mAdc
Collector-Emitter Cutoff Current V_{CE} = 80 Vdc		I_{CEO}		10	mAdc
ON CHARACTERISTICS (2)					
Forward-Current Transfer Ratio		h_{FE}			
I_C = 50 Adc, V_{CE} = 2.6 Vdc	2N6032		10	50	
I_C = 40 Adc, V_{CE} = 2.0 Vdc	2N6033		10	50	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$			Vdc
I_C = 50 Adc, I_B = 5.0 Adc	2N6032			1.3	
I_C = 40 Adc, I_B = 4.0 Adc	2N6033			1.0	
Base-Emitter Saturation Voltage		$V_{BE(sat)}$			Vdc
I_C = 50 Adc, I_B = 5.0 Adc	2N6032			2.0	
I_C = 40 Adc, I_B = 4.0 Adc	2N6033			2.0	
DYNAMIC CHARACTERISTICS					
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio I_C = 2.0 Adc, V_{CE} = 10 Vdc, f = 5.0 MHz		$\lvert h_{fe} \rvert$	10	40	
Output Capacitance V_{CB} = 10 Vdc, I_E = 0, 100 kHz ≤ f ≤ 1.0 MHz		C_{obo}		1,000	pF
SWITCHING CHARACTERISTICS					
Turn-On Time		t_{on}			µs
V_{CC} = 30 Vdc; I_C = 50 Adc; I_B = 5.0 Adc	2N6032			0.5	
V_{CC} = 30 Vdc; I_C = 40 Adc; I_B = 4.0 Adc	2N6033			0.5	
Turn-Off Time		t_{off}			µs
V_{CC} = 30 Vdc±2; I_C = 50 Adc; I_{B1} = 5 I_{B2} = -5 Adc	2N6032			2.0	
V_{CC} = 30 Vdc±2; I_C = 40 Adc; I_{B1} = 4 I_{B2} = -4 Adc	2N6033			2.0	

SAFE OPERATING AREA

DC Tests

T_C = +25^{0}C, 1 Cycle, t = 1.0 s

Test 1

V_{CE} = 2.8 Vdc, I_C = 50 Adc — 2N6032

Test 2

V_{CE} = 3.5 Vdc, I_C = 40 Adc — 2N6033

Test 3

V_{CE} = 24 Vdc, I_C = 5.8 Adc — All Types

Test 4

V_{CE} = 40 Vdc, I_C = 0.9 Adc — All Types

Test 5

V_{CE} = 90 Vdc, I_C = 0.18 Adc — 2N6032

Test 6

V_{CE} = 120 Vdc, I_C = 0.1 Adc — 2N6033

(2) Pulse Test: Pulse Width = 300µs, Duty Cycle ≤ 2.0%.